AUTHOR INDEX

Agyei, E. K. and McMullen, C. C. A study of the isotopic abundance of boron from various sources, 921–927.

Allsopp, H. L., Ulrych, T. J., and Nicolaysen, L. O. Dating some significant events in the history of the Swaziland System by the Rb–Sr isochron method, 605–619.

Almeida, F. F. M. de. *See* Cordani, U. G.

Andrews, J. T. Postglacial rebound in Arctic Canada: Similarity and prediction of uplift curves, 39–47.

Anglejan, B. F. d'. Phosphate diagenesis of carbonate sediments as a mode of in situ formation of marine phosphorites: Observations in a core from the eastern Pacific, 81–87.

Arriens, P. A. *See* Compston, W.

Aswathanarayana, U. Metamorphic chronology of the Precambrian provinces of South India, 591–600.

Auld, D. R. *See* Caner, B.

Aumento, F. The Mid-Atlantic Ridge near 45° N. II. Basalts from the area of Confederation Peak, 1–21.

Baadsgaard, H. *See* Green, D. C.

Bachinski, D. *See* Kanehira, K.

Baer, A. J. Model of evolution of the Bella Coola – Ocean Falls Region, Coast Mountains, British Columbia, 1429–1441.

Baragar, W. R. A. Major-element geochemistry of the Noranda volcanic belt, Quebec–Ontario, 773–790.

Bardack, D. Fossil vertebrates from the marine Cretaceous of Manitoba, 145–153.

Barnes, C. R. Reply: Stratigraphy and sedimentary environments of some Wilderness (Ordovician) limestones, Ottawa Valley, Ontario, by C. R. Barnes, 169–172.

Bartlett, Grant A. Planktonic foraminifera—new dimensions with the Scanning Electron Microscope, 231–233.

Barton, Jackson M. Jr. *See* Doig, Ronald.

Béland, R. *See* Hashimoto, T.

Beliayevsky, N. A., Borisov, A. A., Volvovsky, I. S., and Schukin, Yu. K. Transcontinental crustal sections of the U.S.S.R. and adjacent areas, 1067–1078.

Beloussov, V. V. and Kosminskaya, I. P. Structure and development of transition zones between the continents and oceans, 1011–1026.

Boissonneau, A. N. Glacial history of Northeastern Ontario II. The Timiskaming–Algoma area, 97–109.

Borisov, A. A. *See* Beliayevsky, N. A.

Bottino, Michael L. *See* Fullager, Paul D.

Bristol, Calvert C. The quantitative determination of minerals in some metamorphosed volcanic rocks by X-ray powder diffraction, 235–242.

Brock, P. W. G. Metasomatic and intrusive nepheline-bearing rocks from the Mbozi syenite–gabbro complex, south-western Tanzania, 387–419.

Cameron, E. M. A geochemical profile of the Swan Hills Reef, 287–309.

Caner, B. and Auld, D. R. Magneto-telluric determination of upper mantle conductivity structure at Victoria, British Columbia, 1209–1220.

Carmichael, C. M. *See* Lilley, F. E. M.

Chagnon, Jean-Yves. *See* LaSalle, Pierre.

Christiansen, E. A. A thin till in west-central Saskatchewan, Canada, 329–336.

Christiansen, E. A. Pleistocene stratigraphy of the Saskatoon area, Saskatchewan, Canada, 1167–1173.

Church, W. R. Isotopic ages from the Appalachians and their tectonic significance: Discussion, 1331–1333.

Churcher, C. S. Pleistocene ungulates from the Bow River gravels at Cochrane, Alberta, 1467–1488.

Clifford, P. M. Flood basalts, dike swarms and sub-crustal flow, 93–96.

Coates, M. E. *See* Kumarapeli, P. S.

Collette, B. J. The subsidence of the North Sea area: A summary, 1123–1124.

Compston, W. and Arriens, P. A. The Precambrian geochronology of Australia, 561–583.

Cordani, U. G., Melcher, G. C., and de Almeida, F. F. M. Outline of the Precambrian geochronology of South America 629–632.

Cotlovskay, F. I. *See* Semenenko, N. P.

Couch, R. W. *See* Dehlinger, P.

Cowan, W. R. Ribbed moraine: Till-fabric analysis and origin, 1145–1159.

Cumming, G. L. *See* Green, D. C.

Cumming, G. L. *See* Robertson, D. K.

Damon, Paul E. *See* Livingston, Donald E.

Dehlinger, P., Couch, R. W., and Gemperle, M. Continental and oceanic structure from the Oregon coast westward across the Juan de Fuca Ridge, 1079–1090.

Demenitskaya, R. M., Karasik, A. M., Kiselev, Ju. G., Litvinenko, I. V., and Ushakov, S. A. The transition zone between the Eurasian continent and the Arctic Ocean, 1125–1129.

Demidenko, S. G. *See* Semenenko, N. P.

Dennis, J. G. Isotopic ages from the Appalachians and their tectonic significance: Discussion, 959–961.

Dineley, D. L. and Rust, B. R. Sedimentary and paleontological features of the Tertiary–Cretaceous rocks of Somerset Island, Arctic Canada, 791–799.

Dineley, D. L. and Williams, B. P. J. The Devonian continental rocks of the lower Restigouche River, Quebec, 945–953.

Doig, Ronald and Barton, Jackson M. Jr. Ages of carbonatites and other alkaline rocks in Quebec, 1401–1407.

Dornaar, J. F. Infrared absorption spectra of mineral matter in saxicolous lichens and associated mosses, 223–230.

Dosso, H. W. and Jacobs, J. A. Analogue model measurements of electromagnetic variations in the near field of an oscillating line current, 23–29.

Dragasevic, T. *See* Subbotin, S. I.

Drake, Charles L. *See* Sheridan, Robert E.

Drake, Charles L., Ewing, John I., and Stockard, Henry. The continental margin of the eastern United States, 993–1010.

Du Plessis, A. *See* Simpson, E. S. W.

Eade, K. E. *See* Fahrig, W. F.

Eliseeva, G. D. *See* Semenenko, N. P.

Everdingen, R. O. van. Mobility of main ion species in reverse osmosis and the modification of subsurface brines, 1253–1260.

Everdingen, R. O. van. Studies of formation waters in Western Canada: Geochemistry and hydrodynamics, 523–543.

Evison, F. F. Active regions of the southwest Pacific, 1045–1049.

Ewing, John I. *See* Drake, Charles L.

Fahrig, W. F. and Eade, K. E. The chemical evolution of the Canadian Shield, 1247–1252.

Fahrig, W. F. *See* Murthy, G. S.

Fleet, M. E. The superstructures of two synthetic pyrrhotites, 1183–1185.

Fairbairn, H. W., Faure, G., Pinson, W. H. Jr., and Hurley, P. M. Rb–Sr whole-rock age of the Sudbury lopolith and basin sediments, 707–714.

Fairbairn, H. W. *See* Hurley, P. M.

Faure, G., Murtaugh, J. G., and Montigny, R. J. E. The geology and geochronology of the basement complex of the central Transantarctic Mountains, 555–560.

Faure, G. *See* Fairbairn, H. W.

Faye, G. H. The optical absorption spectra of certain transition metal ions in muscovite, lepidolite, and fuchsite, 31–38.

Fenwick, D. K. B., Keen, M. J., Keen, Charlotte, and Lambert, A. Geophysical studies of the continental margin northeast of Newfoundland, 483–500.

Fullager, Paul D. and Bottino, Michael L. Radiometric age of the volcanics at Arisaig, Nova Scotia, and the Ordovician–Silurian boundary, 311–317.

Geldart, L. P. *See* Jones, F. W.

Gemperle, M. *See* Dehlinger, P.

Gerling, E. K. *See* Kratz, K. O.

Gibb, R. A. A geological interpretation of the Bouguer anomalies adjacent to the Churchill–Superior boundary in northern Manitoba, 439–453.

Gibb, R. A. The densities of Precambrian rocks from northern Manitoba, 433–438.

Gilliland, J. A. and Treichel, A. GOWN—a computer storage system for groundwater data, 1518–1524.

Glaessner, M. F. Biological events and the Precambrian time scale, 585–590.

Globensky, Yvon. Scolecodonts from the Windsor Group (Mississippian) of Nova Scotia, 1397–1400.

Goldich, S. S. Geochronology in the Lake Superior region, 715–724.

Goodacre, A. K. *See* Weber, J. R.

Gopalan, K. *See* Venkatasubramanian, V. S.

Gorai, M. *See* Rikitake, T.

Grant, A. C. Seismic-profiler investigation of the continental margin northeast of Newfoundland, 1187–1198.

Grant, D. A. Current, temperature, and depth data from a moored oceanographic buoy, 1261–1268.

Grant, F. S. Two gravity profiles in the Manicouagan–Wabush area of west-central Quebec, 895–906.

Graham, R. A. F. Effects of diabase dike intrusion on sulfide minerals at Manitouwadge, Ontario, 545–547.

Gray, N. H. *See* Kumarapeli, P. S.

Green, D. C., Baadsgaard, H., and Cumming, G. L. Geochronology of the Yellowknife area, Northwest Territories, Canada, 725–735.

Hall, D. H. Regional magnetic anomalies, magnetic units, and crustal structure in the Kenora District of Ontario, 1277–1296.

Halstead, E. Carl. The Cowichan Ice tongue, Vancouver Island, 1409–1415.

Harington, C. R. A Pleistocene muskox (*Symbos*) from Dease Lake, British Columbia, 1161–1165.

Harper, C. T. Isotopic ages from the Appalachians and their tectonic significance, 49–59.

Harper, C. T. Isotopic ages from the Appalachians and their tectonic significance: Reply to J. G. Dennis, 961–962.

Harper, C. T. Isotopic ages from the Appalachians and their tectonic significance: Reply to W. R. Church, 1334–1335.

Hasegawa, H. S. Surface waves observed close to large chemical explosions at Suffield, Alberta, 185–198.

Hashimoto, T. and Béland, R. Low to medium-grade metamorphism in silicate iron-formations of the Cape Smith belt, New Quebec, 881–893.

Hayase, Ichikazu. *See* Matsumoto, Tatsuro.

Hedge, Carl E. *See* Peterman, Z. E.

Henderson, Eric P. Patterned ground in Southeastern Newfoundland, 1443–1453.

Hermance, John F. Model studies of the coast effect on geomagnetic variations, 515–522.

Hopkins, J. W. Correlation of air temperature normals for the Canadian Great Plains with latitude, longitude, and altitude, 199–210.

Hurley, P. M., Melcher, G. C., Pinson, W. H. Jr., and Fairbairn, H. W. Some orogenic episodes in South America by K–Ar and whole-rock Rb–Sr dating, 633–638.

Hurley, P. M. *See* Fairbairn, H. W.

Irving, E. Measurement of polarity in oceanic basalt, 1319–1321.

Irving, E. and Roy, J. L. Intensité et stabilité d'aimantation des basaltes de l'Oregon et Washington et leurs applications à l'expansion du fond de l'ocean et à d'autres problèmes géophysiques, 907–913.

Isacks, Bryan. *See* Oliver, Jack.

Ishizaka, Kyoichi. *See* Matsumoto, Tatsuro.

Iyer, S. S. *See* Venkatasubramanian, V. S.

Jacobs, J. A. *See* Dosso, H. W.

Jessop, A. M. Three measurements of heat flow in Eastern Canada, 61–68.

Jones, F. W. and Geldart, L. P. Spectral analysis of vertical and horizontal earth current components at separated locations, 1512–1517.

Jones, D. L. *See* Murthy, G. S.

Kaila, K. L. *See* Narain, Hari.

Kalliokoski, J. Structural features and some metallogenic patterns in the southern part of the Superior Province, Canada, 1199–1208.

Kamp, P. C. van de. Geochemistry and origin of metasediments in the Haliburton–Madoc area, southeastern Ontario, 1337–1372.

Kanehira, K. and Bachinski, D. Mineralogy and textural relationships of ores from the Whalesback Mine, northeastern Newfoundland, 1387–1395.

Karasik, A. M. *See* Demenitskaya, R. M.

Katz, Michael. The fabric of the granulites of Mont Tremblant Park, Quebec, 801–812.

Kawano, Yoshinori. *See* Matsumoto, Tatsuro.

Kay, M. Discussion: Stratigraphy and sedimentary environments of some Wilderness (Ordovician) limestones, Ottawa Valley, Ontario, by C. R. Barnes, 166–169.

Keen, Charlotte. *See* Fenwick, D. K. B.

Keen, M. J. *See* Fenwick, D. K. B.

Kellerhals, P. *See* Ross, John V.

Killeen, P. G. *See* Sass, J. H.

Kiselev, Ju. G. *See* Demenitskaya, R. M.

Knorre, K. G. *See* Tougarinov, A. I.

Kosminskaya, I. P. and Zverev, S. M. Abilities of explosion seismology in oceanic and continental crust and mantle studies, 1091–1100.

Kosminskaya, I. P. *See* Beloussov, V. V.

Kratz, K. O., Gerling, E. K., and Lobach-Zhuchenko, S. B. The isotope geology of the Precambrian of the Baltic Shield, 657–660.

Krishnan, R. S. *See* Venkatasubramanian, V. S.

Kumarapeli, P. S., Coates, M. E., and Gray, N. H. The Grand Bois anomaly: the magnetic expression of another Monteregian pluton, 550–553.

Kuno, H. *See* Rikitake, T.

Lambert, A. *See* Fenwick, D. K. B.

Lanphere, Marvin A. Geochronology of the Yavapai Series of central Arizona, 757–762.

Larsen, Ole and Møller, Jørgen. Potassium–argon age studies in West Greenland, 683–691.

LaSalle, P. and Chagnon, Jean-Yves. An ancient landslide along the Saguenay River, Quebec, 548–549.

LaSalle, P. *See* Terasmae, J.

Lawson, D. W. Groundwater flow systems in the crystalline rocks of the Okanagan Highland, British Columbia, 813–824.

Lerbekmo, J. F. Chemical and modal analyses of some Upper Cretaceous and Paleocene bentonites from western Alberta, 1505–1511.

Leutwein, F. Contribution à la connaissance du précambrien récent en Europe Occidentale et développement géochronologique du Brioverien en Bretagne (France), 673–682.

Libby, W. G. *See* Nguyen, K. K.

Lichti-Federovich, Sigrid. *See* Ritchie, J. C.

Lilley, F. E. M. and Carmichael, C. M. Electromagnetic damping of elastic waves: Experimental results, 825–829.

Litvinenko, I. V. *See* Demenitskaya, R. M.

Livingston, Donald E. and Damon, Paul E. The ages of stratified Precambrian rock sequences in central Arizona and northern Sonora, 763–772.

Lobach-Zhuchenko, S. B. *See* Kratz, K. O.

Loveridge, W. D. *See* Wanless, R. K.

Mackintosh, E. E. *See* Murray, J. W.

Manning, P. G. Optical absorption spectra of octahedrally bonded Fe^{3+} in vesuvianite, 89–92.

Mason, G. D. *See* Naldrett, A. J.

Matsumoto, Tatsuro, Yamaguchi, Masaru, Yanagi, Takeru, Matsushita, Susumu, Hayase, Ichikazu, Ishizaka, Kyoichi, Kawano, Yoshinori, and Ueda, Yoshio. The Precambrian problem in younger orogenic zones: An example from Japan, 643–648.

Matsushita, Susumu. *See* Matsumoto, Tatsuro.

McIntosh, R. A. and Wardlaw, K. C. Barren halite bodies in the sylvinite mining zone at Esterhazy, Saskatchewan, 1221–1238.

McMullen, C. C. *See* Agyei, E. K.

McMullen, R. M. *See* Swift, D. J. P.

Melcher, G. C. *See* Cordani, U. G.

Melcher, G. C. *See* Hurley, P. M.

Mituch, E. *See* Subbotin, S. I.

Miyamura, S. *See* Rikitake, T.

Møller, Jørgen. *See* Larsen, Ole.

Money, P. L. The Wollaston Lake fold-belt system, Saskatchewan–Manitoba, 1489–1504.

Montigny, R. J. E. *See* Faure, G.

Mookherjee, Asoke and Suffel, G. G. Massive sulfide – late diabase relationships, Horne mine, Quebec: Genetic and chronological implications, 421–432.

Mothersill, John S. A short note on the depositional shape of the sand bodies comprising the discontinuous part of the Halfway Formation, British Columbia, 1321–1323.

Mott, R. J. A radiocarbon-dated marine algal bed of the Champlain Sea episode near Ottawa, Ontario, 319–324.

Murauchi, S. *See* Rikitake, T.

Murray, J. W. and Mackintosh, E. E. Occurrence of interstratified glauconite-montmorillonoid pellets, Queen Charlotte Sound, British Columbia, 243–247.

Mursky, G. *See* Wanless, R. K.

Murtaugh, J. G. *See* Faure, G.

Murthy, G. S., Fahrig, W. F., and Jones, D. L. The paleomagnetism of the Michikamau anorthositic intrusion, Labrador, 1139–1144.

Mustonen, E. D. *See* Sass, J. H.

Naldrett, A. J. and Mason, G. D. Contrasting Archean ultramafic igneous bodies in Dundonald and Clergue Townships, Ontario, 111–143.

Naldrett, A. J. and Mason, G. D. Erratum: Contrasting ultramafic igneous bodies in Dundonald and Clergue Townships, Ontario, 336.

Narain, Hari, Kaila, K. L., and Verma, R. K. Continental margins of India, 1051–1065.

Neprochnov, Yu. P. Structure of the earth's crust of epi-continental seas: Caspian, Black, and Mediterranean, 1037–1043.

Newton, R. Deriving contour maps from geological data, 165–166.

Nguyen, K. K., Sinclair, A. J., and Libby, W. G. Age of the northern part of the Nelson batholith, 955–957.

Nicolaysen, L. O. *See* Allsopp, H. L.

Obradovich, J. D. and Peterman, Z. E. Geochronology of the Belt Series, Montana, 737–747.

Oliver, Jack and Isacks, Bryan. Structure and mobility of the crust and mantle in the vicinity of island arcs, 985–991.

Pal, S. *See* Venkatasubramanian, V. S.

Park, J. K. *See* Robertson, W. A.

Payne, John G. Geology and geochemistry of the Blue Mountain nepheline syenite, 259–273.

Peterman, Z. E. and Hedge, Carl E. Chronology of Precambrian events in the Front Range, Colorado, 749–756.

Peterman, Z. E. *See* Obradovich, J. D.

Peterman, Z. E. *See* Turek, A.

Philpotts, A. R. Igneous structures and mechanism of emplacement of Mount Johnson, a Monteregian intrusion, Quebec, 1131–1137.

Pinson, W. H., Jr. *See* Fairbairn, H. W.

Pinson, W. H., Jr. *See* Hurley, P. M.

Posgay, K. *See* Subbotin, S. I.

Prokofieva, L. N. *See* Tougarinov, A. I.

Prosen, D. *See* Subbotin, S. I.

Purdy, J. W. and York, D. Rb–Sr whole-rock and K–Ar mineral ages of rocks from the Superior Province near Kirkland Lake, northeastern Ontario, Canada, 699–705.

Reinhardt, E. W. Phase relations in cordierite-bearing gneisses from the Gananoque area, Ontario, 455–482.

Reynolds, P. H. and Russell, R. D. Isotopic composition of lead from Balmat, New York, 1239–1245.

Rex, D. C. *See* Vail, J. R.

Rikitake, T., Miyamura, S., Tsubokawa, I., Murauchi, S., Uyeda, S., Kuno, H., and Gorai, M. Geophysical and geological data in and around the Japan Arc, 1101–1118.

Ritchie, J. C. and Lichti-Federovich, Sigrid. Holocene pollen assemblages from the Tiger Hills, Manitoba, 873–880.

Robertson, D. K. and Cumming, G. L. Lead and sulfur-isotope ratios from the Great Slave Lake area, Canada, 1269–1276.

Robertson, W. A., Roy, J. L., and Park, J. K. Magnetization of the Perry Formation of New Brunswick, and the rotation of Newfoundland, 1175–1181.

Robertson, W. A. *See* Roy, J. L.

Rondot, Jehan. Nouvel impact météoritique fossile? La structure semi-circulaire de Charlevoix, 1305–1317.

Ross, John V. Structural relations at the eastern margin of the Shuswap Complex, near Revelstoke, southeastern British Columbia, 831–849.

Ross, John V. and Kellerhals, P. Evolution of the Slocan Syncline in south-central British Columbia, 851–872.

Roy, J. L. and Robertson, W. A. Evidence for diagenetic magnetization in the Maringouin Formation, 275–285.

Roy, J. L. *See* Irving, E.

Roy, J. L. *See* Robertson, W. A.

Russell, L. S., A dinosaur bone from Willow Creek beds in Montana, 327–329.

Russell, L. S. A new cetacean from the Oligocene Sooke Formation of Vancouver Island, British Columbia, 929–933.

Russell, R. D. *See* Reynolds, P. H.

Rust, B. R. *See* Dineley, D. L.

Sass, J. H., Killeen, P. G., and Mustonen, E. D. Heat flow and surface radioactivity in the Quirke Lake Syncline near Elliot Lake, Ontario, Canada, 1417–1428.

Scherbak, A. P. *See* Semenenko, N. P.

Schukin, Yu. K. *See* Beliayevsky, N. A.

Schwarz, E. J. Thermomagnetic properties of banded manganiferous sediment from the Mid-Atlantic Ridge, 1517–1518.

Semenenko, N. P., Scherbak, A. P., Vinogradov, A. P., Tougarinov, A. I., Eliseeva, G. D., Cotlovskay, F. I., and Demidenko, S. G. Geochronology of the Ukrainian Precambrian, 661–671.

Shanin, L. L. *See* Tougarinov, A. I.

Sheridan, Robert E. and Drake, Charles L. Seaward extension of the Canadian Appalachians, 337–373.

Simpson, E. S. W. and Du Plessis, A. Bathymetric, magnetic, and gravity data from the continental margin of south-western Africa, 1119–1123.

Sinclair, A. J. *See* Nguyen, K. K.

Sinclair, G. W. Comment on Discussion and Reply: Stratigraphy and sedimentary environments of some Wilderness (Ordovician) limestones, Ottawa Valley, Ontario, by C. R. Barnes, 172–173.

Smith, F. G. Three computer programs for contouring map data, 324–327.

Snelling, N. J. *See* Vail, J. R.

Sollogub, V. B. *See* Subbotin, S. I.

Srivastava, S. K. *Azolla* from the Upper Cretaceous Edmonton Formation, Alberta, Canada, 915–919.

Srivastava, S. K. Ephedralean pollen from the Upper Cretaceous Edmonton Formation of Alberta (Canada) and their paleoecological significance, 211–221.

Stalker, A. MacS. Geology of the terraces at Cochrane, Alberta, 1455–1466.

Stalker, A. MacS. Identification of Saskatchewan gravels and sands, 155–163.

Stauffer, M. R. The tracing of hinge-line ore bodies in areas of repeated folding, 69–79.

St. John, Brian E. Paleolacustrine arenites in the Holleford meteorite crater, Ontario, 935–943.

Stockard, Henry. *See* Drake, Charles L.

Stockwell, C. H. Geochronology of stratified rocks of the Canadian Shield, 693–698.

Subbotin, S. I., Sollogub, V. B., Prosen, D., Dragasevic, T., Mituch, E., and Posgay, K. Junction of deep structures of the Carpatho-Balkan region with those of the Black and Adriatic Seas, 1027–1035.

Suffel, G. G. *See* Mookherjee, Asoke.

Swift, D. J. P. and McMullen, R. M. Intertidal sand bodies in the Minas Basin of Fundy, Nova Scotia, 175–183.

Terasmae, J. and LaSalle, P. Notes on late-glacial palynology and geochronology at St. Hilaire, Quebec, 249–257.

Tougarinov, A. I. Geochronology of the Aldan Shield, southeastern Siberia, 649–655.

Tougarinov, A. I., Knorre, K. G., Shanin, L. L., and Prokofieva, L. N. The geochronology of some Precambrian rocks of southern West Africa, 639–642.

Tougarinov, A. I. *See* Semenenko, N. P.

Treichel, A. *See* Gilliland, J. A.

Tsubokawa, I. *See* Rikitake, T.

Tuke, M. F. Autochthonous and allochthonous rocks in the Pistolet Bay area in northernmost Newfoundland, 501–513.

Turek, A. and Peterman, Z. E. Preliminary Rb–Sr geochronology of the Rice Lake – Beresford Lake area, southeastern Manitoba, 1373–1380.

Ueda, Yoshio. *See* Matsumoto, Tatsuro.

Ulrych, T. J. *See* Allsopp, H. L.

Ushakov, S. A. *See* Demenitskaya, R. M.

Uyeda, S. *See* Rikitake, T.

Vail, J. R., Snelling, N. J., and Rex, D. C. Pre-Katangan geochronology of Zambia and adjacent parts of Central Africa, 621–628.

Venkatasubramanian, V. S., Gopalan, K., Iyer, S. S., Pal, S., and Krishnan, R. S. Studies on the Rb–Sr and K–Ar dating of minerals from the Precambrian of India, 601–603.

Venkitasubramanyan, C. S. Determination of optic axial orientation of uniaxial minerals and [02$\bar{2}$1] of dolomite using an ordinary microscope, 1323–1329.

Verma, R. K. *See* Narain, Hari.

Vinogradov, A. P. *See* Semenenko, N. P.

Volvovsky, I. S. *See* Beliayevsky, N. A.

Wanless, R. K., Loveridge, W. D., and Mursky, G. A geochronological study of the White Creek batholith, southeastern British Columbia, 375–386.

Wardlaw, K. C. *See* McIntosh, R. A.

Weber, J. R. and Goodacre, A. K. An analysis of the crust–mantle boundary in Hudson Bay from gravity and seismic observations, 1297–1303.

Williams, B. P. J. *See* Dineley, D. L.

Williams, P. J. Ice distribution in permafrost profiles, 1381–1386.

Worzel, J. Lamar. Advances in marine geophysical research of continental margins, 963–983.

Yamaguchi, Masaru. *See* Matsumoto, Tatsuro.

Yanagi, Takeru. *See* Matsumoto, Tatsuro.

York, D. *See* Purdy, J. W.

Zverev, S. M. *See* Kosminskaya, I. P.

SUBJECT INDEX

Absolute Age, Dates
Appalachians: Harper, C. T., 49.
Discussion: Church, W. R., 1331; Reply to Church: Harper, C. T., 1334.
Discussion: Dennis, J. G., 959; Reply to Dennis: Harper, C. T., 961.
Basement complex, Transantarctic Mountains: Faure, G. *et al.*, 555.
Carbonatites, Quebec: Doig, R. and Barton, J. M. Jr., 1401.
Isotopic composition of lead, Balmat, N.Y.: Reynolds, P. H. and Russell, R. D., 1239.
Lead- and sulfur-isotope ratios, Great Slave Lake: Robertson, D. K. and Cumming, G. L., 1269.
Nelson batholith, British Columbia: Nguyen, K. K. *et al.*, 955.
Precambrian, Aldan Shield, S. E.: Tougarinov, A. I., 649.
Precambrian, Arizona and northern Sonora: Livingston, D. E. and Damon, P. E., 763.
Precambrian, Australia: Compston, W. and Arriens, P. A., 561.
Precambrian, Baltic Shield: Kratz, K. O. *et al.*, 657.
Precambrian, Belt Series, Montana: Obradovich, J. D. and Peterman, Z. E., 737.
Precambrian, Front Range, Colorado: Peterman, Z. E. and Hedge, C. E., 749.
Precambrian, India: Venkatasubramanian, V. S. *et al.*, 601.
Precambrian, Lake Superior Region: Goldich, S. S., 715.
Precambrian, near Kirkland Lake, Ontario: Purdy, J. W. and York, D., 699.
Precambrian of S. America: Cordani, U. G. *et al.*, 629.
Precambrian of S. America: Hurley, P. M. *et al.*, 633.
Precambrian of southern West Africa: Tougarinov, A. I. *et al.*, 639.
Precambrian problem, Japan: Matsumoto, T. *et al.*, 643.
Precambrien récent en Europe Occidentale: Leutwein, F., 673.
Precambrian, S. India: Aswathanarayana, U., 591.
Precambrian, Sudbury lopolith: Fairbairn, H. W. *et al.*, 707.
Precambrian, Ukraine: Semenenko, N. P. *et al.*, 661.
Precambrian, W. Greenland: Larsen, O. and Møller, J., 683.
Precambrian, Yavapai Series, Arizona: Lanphere, M. A., 757.
Precambrian, Yellowknife area, N. W. T.: Green, D. C. *et al.*, 725.
Pre-Katangan geochronology, Zambia: Vail, J. R. *et al.*, 621.
Swaziland System, S. E. Africa: Allsopp, H. L., 605.
Terraces at Cochrane, Alberta: Stalker, A. MacS., 1455.
White Creek batholith, B. C.: Wanless, R. K. *et al.*, 375.
Wollaston Lake fold-belt, Saskatchewan–Manitoba: Money, P. L., 1489.

Africa
Bathymetric, magnetic, and gravity data, southwestern: Simpson, E. S. W. and du Plessis, A., 1119.
Precambrian geochronology, southern West Africa: Tougarinov, A. I., 639.
Pre-Katangan geochronology of Zambia: Vail, J. R. *et al.*, 621.
Rb–Sr dating of Swaziland System: Allsopp, H. L. *et al.*, 605.

Alberta
Azolla from Upper Cretaceous Edmonton Formation: Srivastava, S. K., 915.
Chemical analyses of bentonites: Lerbekmo, J. F., 1505.
Ephedralean pollen, Edmonton Formation: Srivastava, S. K., 211.
Geochemical profile, Swan Hills Reef: Cameron, E. M., 287.
Pleistocene ungulates at Cochrane: Churcher, C. S., 1467.
Surface waves near chemical explosions: Hasegawa, H. S., 185.
Terraces at Cochrane: Stalker, A. MacS., 1455.

Alkaline Rocks
Ages of carbonatites, Quebec: Doig, R. and Barton, M. J. Jr., 1401.

Analogue Models
Electromagnetic variations, land-sea interfaces: Dosso, H. W. and Jacobs, J. A., 23.
Model studies of coast effect on geomagnetic variations: Hermance, J. F., 515.

Antarctica
Geology and geochronology of basement, Transantarctic Mountains: Faure, G. *et al.*, 555.

Appalachians
Geophysical studies, northeast: Fenwick, D. K. B., 483.
Isotopic ages from: Harper, C. T., 49.
Isotopic ages from (Discussion): Church, W. R., 1331.
Isotopic ages from (Reply to Church): Harper, C. T., 1334.
Isotopic ages from (Discussion): Dennis, J. G., 959.
Isotopic ages from (Reply to Dennis): Harper, C. T., 961.
Seaward extension of: Sheridan, R. E. and Drake, C. L., 337.

Archean
Lead- and sulfur-isotope ratios, Great Slave Lake, N. W. T.: Robertson, D. K. and Cumming, G. L., 1269.
Major-element geochemistry, Noranda volcanic belt: Barager, W. R. A., 773.

Rb–Sr geochronology, Rice Lake – Beresford Lake area, Manitoba: Turek, A. and Peterman, Z. E., 1373.
Structural features, metallogenic patterns, Superior Province: Kalliokoski, J., 1199.
Ultramafic bodies, Ontario: Naldrett, A. J. and Mason, G. D., 111.

Arctic Canada
Postglacial rebound: Andrews, J. T., 39.
Tertiary–Cretaceous rocks, Somerset Island: Dineley, D. L. and Rust, B. R., 791.

Arctic Ocean
Transition zone, Eurasian continent and: Demenitskaya, R. M. *et al.*, 1125.

Arizona
Ages, stratified Precambrian sequences: Livingston, D. E. and Damon, P. E., 763.
Geochronology, Yavapai Series: Lanphere, M. A., 757.

Atlantic Ocean
Basalts from Mid-Atlantic Ridge: Aumento, F., 1.
Current, temperature, depth data, southeast of Nova Scotia: Grant, D. A., 1261.
Geophysical studies northeast of Newfoundland: Fenwick, D. K. B. *et al.*, 483.

Australia
Precambrian geochronology: Compston, W. and Arriens, P. A., 561.

Azolla
Upper Cretaceous Edmonton Formation, Alberta: Srivastava, S. K., 915.

Basalt
Flood basalts, origin of: Clifford, P. M., 93.
Mid-Atlantic Ridge near 45° N: Aumento, F., 1.
Polarity in oceanic, Mid-Atlantic Ridge: Irving, E., 1319.

Bentonites
Analyses, Alberta: Lerbekmo, J. F., 1505.

Black Sea
Junction of deep structures, Carpatho-Balkan region: Subbotin, S. I. *et al.*, 1027.
Structure of earth's crust of epi-continental seas: Neprochnov, Yu. P., 1037.

Boron
Isotopic abundance of: Agyei, E. K. and McMullen, C. C., 921.

British Columbia
Age of Nelson batholith, northern part: Nguyen, K. K. *et al.*, 955.
A new cetacean, Vancouver Island: Russell, L. S., 929.
Cowichan Ice tongue, Vancouver Island: Halstead, E. C., 1409.
Evolution of Bella Coola – Ocean Falls region: Baer, A. J., 1429.
Evolution of Slocan Syncline: Ross, J. V., 851.
Geochronological study, White Creek batholith: Wanless, R. K. *et al.*, 375.
Glauconite-montmorillonoid pellets: Murray, J. W. and Mackintosh, E. E., 243.
Groundwater flow systems, Okanagan Highland: Lawson, D. W., 813.
Magneto-telluric determination, Victoria: Caner, B. and Auld, D. R., 1209.
Pleistocene muskox, Dease Lake: Harington, C. R., 1161.
Shape of sand bodies, Halfway Formation: Mothersill, J. S., 1321.
Structural relations in Shuswap Complex near Revelstoke: Ross, J. V., 831.

Cambro-Ordovician
Rhyolites, Transantarctic Mountains: Faure, G. *et al.*, 555.

Canadian Shield
Chemical evolution of: Fahrig, W. F. and Eade, K. E., 1247.
Dike swarms in: Clifford, P. M., 93.
Geochronology of stratified rocks of: Stockwell, C. H., 693.

Carbonatites
Ages, Quebec: Doig, R. and Barton, J. M. Jr., 1401.

Carpatho-Balkan region
Junction of deep structures in: Subbotin, S. I. *et al.*, 1027.

Cartography
Computer programs for contouring map data: Smith, F. G., 324.

Cenozoic
Polarity, oceanic basalt, Mid-Atlantic Ridge: Irving, E., 1319.

Changes of Level
Postglacial rebound, Arctic Canada: Andrews, J. T., 39.

Chemical Analyses
Basalt, Mid-Atlantic Ridge: Aumento, F. 1.
Of bentonites, Alberta: Lerbekmo, J. F., 1505.
Of metasediments, Haliburton–Madoc area, Ontario: van de Kamp, P. C., 1337.

Computer
Contouring map data by: Smith, F. G., 324.
GOWN—a storage system for groundwater data: Gilliland, J. A. and Treichel, A., 1518.

Chonectus sookensis
New cetacean, Sooke Formation, B. C.: Russell, L. S., 929.

Churchill Province
Wollaston Lake fold-belt, Saskatchewan–Manitoba: Money, P. L., 1489.

Colorado
Geochronology, Precambrian, Front Range: Peterman, Z. E. and Hedge, C. E., 749.

Continental Margins
Eastern United States: Drake, C. L. *et al.*, 993.
Eurasia and Arctic Ocean: Demenitskaya, R. M. *et al.*, 1125.
India: Narain, H. *et al.*, 1051.
Marine geophysical research: Worzel, J. L., 963.
Northeast of Newfoundland: Grant, A. C., 1187.
Northern Appalachians: Sheridan, R. E. and Drake, C. L., 337.
Oregon coast: Dehlinger, P. *et al.*, 1079.
Southwestern Africa: Simpson, E. S. W. and du Plessis, A., 1119.
Southwest Pacific: Evison, F. F., 1045.
Structure and development of: Beloussov, V. V. and Kosminskaya, I. P., 1011.

Craters
Nouvel impact météorique fossile? Charlevoix, Quebec: Rondot, J., 1305.
Paleolacustrine sediments in, Holleford, Ontario: St. John, B. E., 935.

Cretaceous
Azolla from Edmonton Formation, Alberta: Srivastava, S. K., 915.
Chemical analyses of bentonites, Alberta: Lerbekmo, J. F., 1505.
Dinosaur bone, Willow Creek beds, Montana: Russell, L. S., 327.
Ephedralean pollen, Edmonton Formation, Alberta: Srivastava, S. K., 211.
Mechanism of emplacement, Mount Johnson, Quebec: Philpotts, A. R., 1131.
Sedimentary features, Tertiary–Cretaceous rocks, Somerset Island: Dineley, D. L. and Rust, B. R., 791.
Vertebrates, Manitoba: Bardack, D., 145.

Data Storage
GOWN—a computer system for groundwater data: Gilliland, J. A. and Treichel, A., 1518.

Devonian
Continental rocks, Restigouche River, Quebec: Dineley, D. L. and Williams, B. P. J., 945.
Geochemical profile, Swan Hills Reef, Alberta: Cameron, E. M., 287.
Halite bodies in sylvinite zone, Saskatchewan: McIntosh, R. A. and Wardlaw, N. C., 1221.
Isotopic ages, Appalachians: Harper, C. T., 49.
Isotopic ages, Appalachians (Discussion): Dennis, J. G., 959.
Isotopic ages, Appalachians (Reply to Dennis): Harper, C. T., 961.
Isotopic ages, Appalachians (Discussion): Church, W. R., 1331.
Isotopic ages, Appalachians (Reply to Church): Harper, C. T., 1334.
Magnetization, Perry Formation, New Brunswick: Robertson, W. A., 1175.

Earth Current Methods
Spectral analysis of earth current components: Jones, F. W. and Geldart, L. P., 1512.

Eastern Canada
Heat flow measurements: Jessop, A. M., 61.
Structural features, metallogenic patterns, Superior Province: Kalliokoski, J., 1199.

Eastern Pacific
Phosphate diagenesis: d'Anglejan, B. F., 81.

Economic Geology
Barren halite bodies in sylvinite zone, Saskatchewan: McIntosh, R. A. and Wardlaw, N. C., 1221.
Effect of diabase intrusion on sulfides: Graham, R. A. F., 545.
Isotopic composition of lead, Balmat, N. Y.: Reynolds, P. H. and Russell, R. D., 1239.
Mineralogy of ores, Whalesback Mine, Newfoundland: Kanehira, K. and Bachinski, D., 1387.
Structure and metallogenic patterns, Superior Province: Kalliokoski, J., 1199.
Sulfide–diabase relationships, Horne mine, Quebec: Mookherjee, A. and Suffel, G. G., 421.
Tracing of hinge-line ore bodies: Stauffer, M. R., 69.

Erosion
Ancient landslide, Quebec: LaSalle, P. and Chagnon, J. Y., 548.

Europe
Développement géochronologique en Bretagne (France): Leutwein, F., 673.
Junction of deep structures, Carpatho-Balkan region: Subbotin, S. I. *et al.*, 1027.
Precambrian isotope geology, Baltic Shield: Kratz, K. O. *et al.*, 657.

Structure of crust of epicontinental seas, Caspian, Black, Mediterranean: Neprochnov, Yu. P., 1037.
Subsidence of North Sea area: Collette, B. J. 1123.
Transition zone, Eurasian continent and Arctic Ocean: Demenitskaya, R. M. *et al.*, 1125.

Explosion Phenomena
Surface waves near chemical explosions: Hasegawa, H. S., 185.

Faults
Middle Ordovician klippen, northern Newfoundland: Tuke, M. F., 501.

Fiji-Tonga Region
Structure and mobility of crust in: Oliver, J. and Isacks, B., 985.

France
Développement géochronologique en Bretagne (France): Leutwein, F., 673.

Geochemistry
Chemical evolution of Canadian Shield: Fahrig, W. F. and Eade, K. E., 1247.
Formation waters, Western Canada: van Everdingen, R. O., 523.
Geochemical profile, Swan Hills Reef: Cameron, E. M., 287
Isotopic abundance of boron: Agyei, E. K. and McMullen, C. C., 921.
Isotopic composition of lead, Balmat, N. Y.: Reynolds, P. H. and Russell, R. D., 1239.
Major elements, Noranda volcanic belt: Baragar, W. R. A., 773.
Metasediments, Haliburton–Madoc area, Ontario: van der Kamp, P. C., 1337.
Nepheline syenite, Blue Mountain: Payne, J. G., 259.
Phase relations in gneisses, Gananoque area: Reinhardt, E. W., 455.

Geochronology
Age of volcanics, Arisaig, N. S.: Fullager, P. D. and Bottino, M. L., 311.
Ages of carbonatites, Quebec: Doig, R. and Barton, J. M. Jr., 1401.
Algal bed near Ottawa: Mott, R. J., 319.
Ancient landslide, Saguenay River, Quebec: LaSalle, P. and Chagnon, J. Y., 548.
Appalachians: Harper, C. T., 49.
Appalachians (Discussion): Dennis, J. G., 959.
Appalachians (Reply to Dennis): Harper, C. T., 961.
Appalachians (Discussion): Church, W. R., 1331.
Appalachians (Reply to Church): Harper, C. T., 1334.
Basement complex, Transantarctic Mountains: Faure, G. *et al.*, 555.
Biological events and Precambrian time scale: Glaessner, M. F., 585.
Isotopic composition of lead, Balmat, N. Y.: Reynolds, P. H. and Russell, P. D., 1239.
Late-glacial, at St. Hilaire: Terasmae, J. and LaSalle, P., 249.
Lead- and sulfur-isotope ratios, Great Slave Lake: Robertson, D. K. and Cumming, G. L., 1269.
Metamorphic chronology, Precambrian, S. India: Aswathanarayana, U., 591.
Nelson batholith, British Columbia: Nguyen, K. K. *et al.*, 955.
Ordovician–Silurian boundary: Fullager, P. D. and Bottino, M. L., 311.
Precambrian, Aldan Shield, S. E. Siberia: Tougarinov, A. I., 649.
Precambrian, Arizona and northern Sonora: Livingston, D. E. and Damon, P. E., 763.
Precambrian, Australia: Compston, W. and Arriens, P. A., 561.
Precambrian, Baltic Shield: Kratz, K. O. *et al.*, 657.
Precambrian, Belt Series, Montana: Obradovich, J. D. and Peterman, Z. E., 737.
Precambrian, Canadian Shield: Stockwell, C. H., 693.
Precambrian, Front Range, Colorado: Peterman, Z. E. and Hedge, C. E., 749.
Precambrian, India: Venkatasubramanian, V. S., 601.
Precambrian, Lake Superior region: Goldich, S. S., 715.
Precambrian, near Kirkland Lake, Ontario: Purdy, J. W. and York, D., 699.
Precambrian of S. America: Cordani, U. G. *et al.*, 629.
Precambrian of S. America: Hurley, P. M. *et al.*, 633.
Precambrian of southern West Africa; Tougarinov, A. I. *et al.*, 639.
Precambrian problem, Japan: Matsumoto, T. *et al.*, 643.
Precambrien récent en Europe Occidentale: Leutwein, F., 673.
Precambrian, Sudbury lopolith: Fairbairn, H. W. *et al.*, 707.
Precambrian, Ukraine: Semenenko, N. P. *et al.*, 661.
Precambrian, W. Greenland: Larsen, O. and Møller, J., 683.
Precambrian, Yavapai Series, Arizona: Lanphere, M. A., 757.
Precambrian, Yellowknife area, N. W. T.: Green, D. C. *et al.*, 725.
Pre-Katangan, of Zambia: Vail, J. R. *et al.*, 621.
Rb–Sr, Rice Lake – Beresford Lake area, Manitoba: Turek, A. and Peterman, Z. E., 1373.
Swaziland System, S. E. Africa: Allsopp, H. L., 605.
Terraces at Cochrane, Alberta: Stalker, A. MacS., 1455.
White Creek batholith, British Columbia: Wanless, R. K. *et al.*, 375.

Geomorphology
Ancient landslide, Quebec: LaSalle, P. and Chagnon, J. Y., 548.

Geophysics
Advances in marine geophysical research: Worzel, J. L., 963.
Analog model studies on geomagnetic variations: Hermance, J. F., 515.
Bathymetric, magnetic and gravity data, southwestern Africa: Simpson, E. S. W. and du Plessis, A., 1119.
Bouguer anomalies, Manitoba: Gibb, R. A., 439.
Continental margin, eastern U.S.A.: Drake, C. L. *et al.*, 993.
Continental margin off Newfoundland: Fenwick, D. K. B. *et al.*, 483.
Continental margins of India: Narain, H. *et al.*, 1051.
Crustal structure, Caspian, Black, and Mediterranean Seas: Neprochnov, Yu. P., 1037.
Crust–mantle boundary in Hudson Bay: Weber, J. R. and Goodacre, A. K., 1297.
Deep crustal structures, Carpatho-Balkan region: Subbotin, S. I., *et al.*, 1027.
Densities of Precambrian rocks, Manitoba: Gibb, R. A., 433.
Diagenetic magnetization, Maringouin Formation, N. B.: Roy, J. L. and Robertson, W. A., 275.
Electromagnetic damping of elastic waves: Lilley, F. E. M. and Carmichael, C. M., 825.
Explosion seismology in crust and mantle studies: Kosminskaya, I. P. and Zverev, S. M., 1091.
Geophysical data around Japan Arc: Rikitake, T. *et al.*, 1101.
Grand Bois magnetic anomaly, Quebec: Kumarapeli, P. S. *et al.*, 550.
Gravity profiles, Manicouagan–Wabush area: Grant, F. S., 895.
Heat flow, surface radioactivity, Elliot Lake, Ontario: Sass, J. H. *et al.*, 1417.
Infrared absorption spectra in lichens and mosses: Dormaar, J. F., 223.
Magnetic anomalies and crustal structure, Kenora District, Ontario: Hall, D. H., 1277.
Magneto-telluric determinations, Victoria, B.C.: Caner, B. and Auld, D. R., 1209.
Polarity in oceanic basalt, Mid-Atlantic Ridge: Irving, E., 1319.
Seismic-profiler investigation, northeast of Newfoundland: Grant, A. C., 1187.
Seismic-refraction profiles, northern Appalachians: Sheridan, R. E. and Drake, C. L., 337.
Spectral analysis of earth current components: Jones, F. W. and Geldart, L. P., 1512.
Stabilité d'aimantation des basaltes de l'Oregon et Washington: Irving, E. and Roy, J. L., 907.
Structure west from Oregon coast: Dehlinger, P. *et al.*, 1079.
Surface waves near chemical explosions: Hasegawa, H. S., 185.
Thermomagnetic properties, Mid-Atlantic Ridge: Schwarz, E. J., 1517.
Transition zone between Eurasia and Arctic Ocean: Demenitskaya, R. M. *et al.*, 1125.
Transition zones between continents and oceans: Beloussov, V. V. and Kosminskaya, I. P., 1011.

Glacial Geology
(*See* Quaternary)

Glaciation
Cowichan Ice tongue, Vancouver Island: Halstead, E. C., 1409.
Terraces of Cochrane, Alberta: Stalker, A. MacS., 1455.
Timiskaming–Algoma area: Boissonneau, A. N., 97.

Gravity Surveys
Bouguer anomalies, Manitoba: Gibb, R. A., 439.
Crust-mantle boundary in Hudson Bay: Weber, J. R. and Goodacre, A. K., 1297.
Density of Precambrian rocks, Manitoba: Gibb, R. A., 433.
Two profiles, Manicouagan–Wabush area: Grant, F. S., 895.

Great Plains
Air temperature normals: Hopkins, J. W., 199.

Greenland
K–Ar age studies, West: Larsen, O. and Møller, J., 683.

Grenville Province
Ages of carbonatites, Quebec: Doig, R. and Barton, M. J. Jr., 1401.
Fabric of granulites, Mont Tremblant Park, Quebec: Katz, M., 801.
Geochemistry of metasediments, Haliburton–Madoc area, Ontario: van de Kamp, P. C., 1337.
Heat flow in: Jessop, A. M., 61.
Paleolacustrine arenites, Holleford crater, Ontario: St. John, B. E., 935.
Two gravity profiles, Manicouagan–Wabush area, Quebec: Grant, F. S., 895.

Groundwater
Flow systems, Okanagan Highland: Lawson, D. W., 813.
Formation waters, Western Canada: van Everdingen, R. I., 523.
GOWN—a computer storage system: Gilliland, J. A. and Treichel, A., 1518.
Mobility of main ion species in reverse osmosis: van Everdingen, R. O., 1253.

Halite
Barren halite bodies in sylvinite zone, Saskatchewan: McIntosh, R. A. and Wardlaw, N. C., 1221.

Heat Flow
And surface radioactivity, Elliot Lake, Ontario: Sass, J. H. *et al.*, 1417.
Three measurements, Eastern Canada: Jessop, A. M., 61.

Hudson Bay
Crust–mantle boundary in: Weber, J. R. and Goodacre, A. K., 1297.

Hydrogeology
Formation waters in Western Canada: van Everdingen, R. O., 523.
GOWN—a computer storage system: Gilliland, J. A. and Treichel, A., 1518.
Groundwater flow systems, Okanagan Highland: Lawson, D. W., 813.
Mobility of main ion species in reverse osmosis: van Everdingen, R. O., 1253.

Igneous Rocks
Archean ultramafic bodies, Ontario: Naldrett, A. J. and Mason, G. D., 111.
Basalt, Mid-Atlantic Ridge: Aumento, F., 1.
Igneous structures, Mount Johnson, Quebec: Philpotts, A. R., 1131.
Nepheline-bearing rocks, Tanzania: Brock, P. W. G., 387.
Nepheline syenite, Blue Mountain: Payne, J. G., 259.

India
Continental margins of: Narain, H. *et al.*, 1051.
Metamorphic chronology of Precambrian provinces: Aswathanarayana, U., 591.
Rb–Sr and K–Ar dating, Precambrian: Venkatasubramanian, V. S. *et al.*, 601.

Infrared Methods
Absorption spectra in lichens and mosses: Dormaar, J. F., 223.

Intrusions
Igneous structures, Mount Johnson, Quebec: Philpotts, A. R., 1131.

Iron-formation
Low to medium-grade metamorphism, New Quebec: Hashimoto, T. and Béland, R., 881.

Island Arcs
Active regions, southwest Pacific: Evison, F. F., 1045.
Japan Arc: Rikitake, T. *et al.*, 1101.
Structure and mobility of crust and mantle near: Oliver, J. and Isacks, B., 985.

Isotopes
Lead- and sulfur-isotope ratios, Great Slave Lake: Robertson, D. K. and Cumming, G. L., 1269.

Japan
Geophysical and geological data, Japan Arc: Rikitake, T. *et al.*, 1101.
Precambrian problem: Matsumoto, T. *et al.*, 643.

Jurassic
Nelson batholith, northern part, age of: Nguyen, K. K. *et al.*, 955.

Labrador
Paleomagnetism, Michikamau anorthositic intrusion: Murthy, G. S. *et al.*, 1139.
Ribbed moraine, west-central Labrador: Cowan, W. R., 1145.

Lake Superior Region
Geochronology in: Goldich, S. S., 715.

Magnetic Methods
Analog model studies on geomagnetic variations: Hermance, J. F., 515.

Magnetotelluric Surveys
Upper mantle conductivity structure, Victoria, B.C.: Caner, B. and Auld, D. R., 1209.

Manitoba
Bouguer anomalies near Churchill–Superior boundary: Gibb, R. A., 439.
Densities of Precambrian rocks: Gibb, R. A., 433.
Holocene pollen assemblages, Tiger Hills: Ritchie, J. C. and Lichti-Federovich, S., 873.
Marine Cretaceous vertebrates: Bardack, D., 145.
Rb–Sr geochronology, Rice Lake – Beresford Lake area, Manitoba: Turek, A. and Peterman, Z. E., 1373.
Wollaston Lake fold-belt: Money, P. L., 1489.

Marine Geology
Geophysical studies northeast of Newfoundland: Fenwick, D. K. B. *et al.*, 483.
Seaward extension of Canadian Appalachians: Sheridan, R. E. and Drake, C. L., 337.

Mesozoic
Evolution of Bella Coola – Ocean Falls, British Columbia: Baer, A. J., 1429.

Metamorphic Rocks
Evolution of Bella Coola – Ocean Falls, British Columbia: Baer, A. J., 1429.
Silicate iron-formations, New Quebec: Hashimoto, T. and Béland, R., 881.
Granulites, Mont Tremblant Park: Katz, M., 801.
Wollaston Lake fold-belt, Saskatchewan–Manitoba: Money, P. L., 1489.

Meteorology
Air temperature normals, Great Plains: Hopkins, J. W., 199.

Microscope Methods
Scanning Electron Microscope, aid in paleontology: Bartlett, G. A., 231.

Mid-Atlantic Ridge
Basalt, near 45° N: Aumento, F., 1.
Polarity of basalt: Irving, E., 1319.
Thermomagnetic properties of manganiferous sediment from: Schwarz, E. J., 1517.

Mineral Exploration
The tracing of hinge-line ore bodies: Stauffer, M. R., 69.

Mineralography
Ores, Whalesback Mine, Newfoundland: Kanehira, K. and Bachinski, D., 1387.

Mineralogy
Effect of diabase dike on sulfides: Graham, R. A. F., 545.
Interstratified glauconite–montmorillonoid pellets, B. C.: Murray, J. W. and Mackintosh, E. E., 243.
Mineral determination by X-ray powder diffraction: Bristol, C., 235.
Optical absorption spectra, muscovite, lepidolite, and fuchsite: Faye, G. H., 31.
Optical absorption spectra, vesuvianite: Manning, P. G., 89.
Optic axial orientation of uniaxial minerals: Venkitasubramanyan, C. S., 1323.
Ores from Whalesback Mine, Newfoundland: Kanehira, K. and Bachinski, D., 1387.
Phase relations in cordierite-bearing gneisses: Reinhardt, E. W., 455.
Superstructures of two pyrrhotites: Fleet, M. E , 1183.

Mississippian
Diagenetic remanent magnetization, Maringouin Formation: Roy, J. L. and Robertson, W. A. 275.
Scolecodonts in Windsor Group, Nova Scotia: Globensky, Y., 1397.

Montana
Dinosaur bone, Willow Creek beds: Russell, L. S., 327.
Geochronology of Belt Series: Obradovich, J. D. and Peterman, Z. E., 737.

New Brunswick
Diagenetic magnetization, Maringouin Formation: Roy, J. L. and Robertson, W. A., 275.
Magnetization of Perry Formation: Robertson, W. A. *et al.*, 1175.

Newfoundland
Autochthonous and allochthonous rocks, Pistolet Bay area: Tuke, M. F., 501.
Geophysical studies northeast of: Fenwick, D. K. B. *et al.*, 483.
Mineralogy of ores, Whalesback Mine, Newfoundland: Kanehira, K. and Bachinski, D., 1387.
Patterned ground: Henderson, E. P., 1443.
Seismic-profile investigation, northeast of: Grant, A. C., 1187.

New York
Isotopic composition of lead, Balmat: Reynolds, P. H. and Russell, R. D., 1239.

Northeastern Ontario
Glacial history, Timiskaming–Algoma area: Boissonneau, A. N., 97.
Rb–Sr and K–Ar ages near Kirkland Lake, Purdy, J. W. and York, D., 699.
Structural features, metallogenic patterns, Superior Province: Kalliokoski, J., 1199.

North Sea Area
Subsidence of: Collette, B. J., 1123.

Northwest Territories
Geochronology, Yellowknife area: Green, D. C. *et al.*, 725.
Ice distribution in permafrost profiles: Williams, P. J., 1381.
Lead- and sulfur-isotope ratios, Great Slave Lake: Robertson, D. K. and Cumming, G. L., 1269.
Tertiary–Cretaceous rocks, Somerset Island: Dineley, D. L. and Rust, B. R., 791.

Nova Scotia
Current, temperature, and depth data, southeast of: Grant, D. A., 1261.
Intertidal sand bodies, Minas Basin: Swift, D. J. P. and McMullen, R. M., 175.
Radiometric age, Arisaig volcanics: Fullager, P. D. and Bottino, M. L., 311.
Scolecondonts in Windsor Group, Nova Scotia: Globensky, Y., 1397.

Oceanography
Basalt, Mid-Atlantic Ridge near 45° N: Aumento, F., 1.
Current, temperature, and depth data, southeast of Nova Scotia: Grant, D A., 1261.
Geophysical studies northeast of Newfoundland: Fenwick, D. K. B. *et al.*, 483.
In situ formation of marine phosphorites: d'Anglejan, B. F., 81.
Seaward extension of Canadian Appalachians: Sheridan, R. E. and Drake, C. L., 337.

Oligocene
A new cetacean, Vancouver Island: Russell, L. R., 929.

Ontario
Archean ultramafic bodies: Naldrett, A. J. and Mason, G. D., 111.
Effects of diabase dike intrusion on sulfides, Manitouwadge: Graham. R. A. F., 545.

Geochemistry of metasediments, Haliburton–Madoc area, Ontario: van de Kamp, P. C., 1337.
Geochronology, Lake Superior Region: Goldich, S. S., 715.
Glacial history, Timiskaming–Algoma area: Boissonneau, A. N., 97.
Heat flow, surface radioactivity, Elliot Lake, Ontario: Sass, J H. *et al.*, 1417.
Major-element geochemistry, Noranda volcanic belt: Baragar, W. R. A., 773.
Marine algal bed, Champlain Sea, near Ottawa: Mott, R. J., 319.
Nepheline syenite, Blue Mountain: Payne, J. G., 259.
Paleolacustrine arenites, Holleford crater: St. John, B. E., 935.
Phase relations in gneisses, Gananoque area: Reinhardt, E. W., 455.
Rb–Sr age, Sudbury lopolith: Fairbairn, H. W. *et al.*, 707.
Rb–Sr and K–Ar ages near Kirkland Lake: Purdy, J. W. and York, D. 699.
Regional magnetic anomalies, Kenora District: Hall, D. H., 1277.
Stratigraphy, Ordovician limestones, Ottawa Valley (Discussion): Kay, M., 166; (Reply): Barnes, C. R., 169; (Comment): Sinclair, G. W., 172.
Structural features, metallogenic patterns, Superior Province: Kalliokoski, J., 1199.

Ordovician
Autochthonous and allochthonous rocks, Pistolet Bay area, Newfoundland: Tuke, M. F., 501.
Isotopic ages, Appalachians: Harper, C. T., 49.
Isotopic ages, Appalachians (Discussion): Dennis, J. G. 959.
Isotopic ages, Appalachians (Reply to Dennis): Harper, C. T., 961.
Isotopic ages, Appalachians (Discussion): Church, W. R., 1331.
Isotopic ages, Appalachians (Reply to Church): Harper, C. T., 1334.
Mineralogy of ores, Whalesback Mine, Newfoundland: Kanehira, K. and Bachinski, D., 1387.
Ordovician–Silurian boundary, Arisaig, N. S.: Fullager, P. D. and Bottino, M. L., 311.
Stratigraphy, Ottawa Valley. (Discussion): Kay, M., 166; (Reply): Barnes, C. R., 169; (Comment): Sinclair, G. W., 172.
Volcanics at Arisaig, Nova Scotia: Fullager, P. D. and Bottino, M. L., 311.

Orogeny
Evolution of Bella Coola – Ocean Falls, British Columbia: Baer, A. J., 1429.

Oregon
Continental and oceanic structures westward from: Dehlinger, P. *et al.*, 1079.
Stabilité d'aimantation des basaltes: Irving, E. and Roy, J. L., 907.

Pacific
Active regions, southwest: Evison, F. F., 1045.
Phosphate diagenesis, eastern: d'Anglejan, B. F., 81.
Structure and mobility of crust, Fiji–Tonga region: Oliver, J. and Isacks, B., 985.

Paleobotany
Azolla, Upper Cretaceous Edmonton Formation, Alberta: Srivastava, S. K., 915.
Ephedralean pollen, Cretaceous, Alberta: Srivastava, S. K., 211.
Holocene pollen assemblages, Manitoba: Ritchie, J. C. and Lichti-Federovich, S., 873.
Late glacial palynology, St. Hilaire: Terasmae, J. and LaSalle, P., 249.

Paleocene
Chemical analyses of bentonites, Alberta: Lerbekmo, J. F., 1505.

Paleontology
Dinosaur bone, Willow Creek beds, Montana: Russell, L. S., 327.
Ephedralean pollen, Cretaceous, from Alberta: Srivastava, S. K., 211.
New cetacean from Sooke Formation, B.C.: Russell, L. R., 929.
Paleontological features, Tertiary–Cretaceous rocks, Somerset Island: Dineley, D. L. and Rust, B. R., 791.
Pleistocene muskox, Dease Lake, B.C.: Harington, C. R., 1161.
Scanning Electron Microscope as an aid: Bartlett, G. A., 231.
Scolecodonts in Windsor Group, Nova Scotia: Globensky, Y., 1397.
Vertebrates, Cretaceous, from Manitoba: Bardack, D., 145.

Paleomagnetism
Grand Bois anomaly, Quebec: Kumarapeli, P. S. *et al.*, 550.
Magnetization, Perry Formation, New Brunswick: Robertson, W. A. *et al.*, 1175.
Maringouin Formation, New Brunswick: Roy, J. L. and Robertson, W. A., 275.
Michikamau anorthositic intrusion, Labrador: Murthy, G. S. *et al.*, 1139.
Polarity in oceanic basalt, Mid-Atlantic Ridge: Irving, E., 1319.
Regional magnetic anomalies, Kenora District, Ontario: Hall, D. H., 1277.
Stabilité d'aimantation des basaltes de l'Oregon et Washington: Irving, E. and Roy, J. L., 907.
Thermomagnetic properties, Mid-Atlantic Ridge: Schwarz, E. J., 1517.

Palynology
Azolla, Upper Cretaceous Edmonton Formation, Alberta: Srivastava, S. K., 915.
Ephedralean pollen, Cretaceous, Alberta: Srivastava, S. K., 211.
Holocene pollen assemblages, Manitoba: Ritchie, J. C. and Lichti-Federovich, S., 873.
Late glacial palynology, St. Hilaire: Terasmae, J. and LaSalle, P., 249.

Patterned Ground
In Southeastern Newfoundland: Henderson, E. P., 1443.

Permafrost
Ice distribution in: Williams, P. J., 1381.

Petrology
Granulites, Mont Tremblant Park: Katz, M., 801.
Igneous structures, Mount Johnson, Quebec: Philpotts, A. R., 1131.
Nepheline-bearing rocks, Tanzania: Brock, P. W. G., 387.
Nepheline syenite, Blue Mountain: Payne, J. G., 259.
Phase relations in gneisses, Gananoque area: Reinhardt, E. W., 455.

Pleistocene
(*See* Quaternary).

Potash Deposits
Barren halite bodies in, Esterhazy, Saskatchewan: McIntosh, R. A. and Wardlaw, N. C., 1221.

Precambrian
Ages, stratified rocks, Arizona and Sonora: Livingston, D. E. and Damon, P. E., 763.
Basement complex, Transantarctic Mountains: Faure, G. *et al.*, 555.
Biological events and time scale: Glaessner, M. F., 585.
Bouguer anomalies, northern Manitoba: Gibb, R. A., 439.
Chemical evolution, Canadian Shield: Fahrig, W. F. and Eade, K. E., 1247.
Geochemistry of metasediments, Haliburton–Madoc area, Ontario: van de Kamp, P. C., 1337.
Geochronology, Aldan Shield, S.E. Siberia: Tougarinov, A. I., 649.
Geochronology, Belt Series, Montana: Obradovich, J. D. and Peterman, Z. E., 737.
Geochronology, Front Range, Colorado: Peterman, Z. E. and Hedge, C. E., 749.
Geochronology, Lake Superior Region: Goldich, S. S., 715.
Geochronology of Australia: Compston, W. and Arriens, P. A., 561.
Geochronology of South America: Cordani, U. G. *et al.*, 629.
Geochronology of stratified rocks, Canadian Shield: Stockwell, C. H., 693.
Geochronology, southern West Africa: Tougarinov, A. I. *et al.*, 639.
Geochronology, Ukrainian Precambrian: Semenenko, N. P. *et al.*, 661.
Geochronology, Yavapai Series, Arizona: Lanphere, M. A., 757.
Geochronology, Yellowknife area, Northwest Territories: Green, D. C. *et al.*, 725.
Heat flow, surface radioactivity, Elliot Lake, Ontario: Sass, J. H. *et al.*, 1417.
Isotope geology, Baltic Shield: Kratz, K. O. *et al.*, 657.
Isotopic composition of lead, Balmat, N.Y.: Reynolds, P. H. and Russell, R. D., 1239.
K–Ar age studies, West Greenland: Larsen, O. and Møller, J., 683.
Lead- and sulfur-isotope ratios, Great Slave Lake, N.W.T.: Robertson, D. K. and Cumming, G. L., 1269.
Metamorphic chronology, South India: Aswathanarayana, U., 591.
Nepheline-bearing rocks, Tanzania: Brock, P. W. G., 387.
Orogenic episodes in South America: Hurley, P. M. *et al.*, 633.
Paleomagnetism, Michikamau anorthosite, Labrador: Murthy, G. S. *et al.*, 1139.
Phase relations of gneisses near Gananoque: Reinhardt, E. W., 455.
Precambrian problem, Japan: Matsumoto, T. *et al.*, 643.
Précambrien récent en Europe Occidentale: Leutwein, F., 673.
Pre-Katangan geochronology, Zambia: Vail, J. R. *et al.*, 621.
Rb–Sr age, Sudbury lopolith: Fairbairn, H. W. *et al.*, 707.
Rb–Sr and K–Ar ages near Kirkland Lake, Ontario: Purdy, J. W. and York, D., 699.
Rb–Sr dating of significant events of Swaziland System, S.E. Africa: Allsopp, H. L. *et al.*, 605.
Rb–Sr and K–Ar dating of minerals, India: Venkatasubramanian, V. S. *et al.*, 601.
Rb–Sr geochronology, Rice Lake – Beresford Lake area, Manitoba: Turek, A. and Peterman, Z. E. 1373.
Regional magnetic anomalies, Kenora District, Ontario: Hall, D. H., 1277.
Rock densities, northern Manitoba: Gibb, R. A., 433.
Structural features, metallogenic patterns, Superior Province: Kalliokoski, J., 1199.
Wollaston Lake fold-belt, Saskatchewan–Manitoba: Money, P. L., 1489.

Preglacial
Sands and gravels, Saskatchewan: Stalker, A. MacS., 155.

Proterozoic
Isotopic composition of lead, Balmat, N.Y.: Reynolds, P. H. and Russell, R. D., 1239.
Nepheline syenite, Blue Mountain: Payne, J. G., 259.
Paleomagnetism, Michikamau anorthosite, Labrador: Murthy, G. S. *et al.*, 1139.

Quaternary
Ancient landslide, Saguenay River, Quebec: LaSalle, P. and Chagnon, J.-Y., 548.
Cowichan Ice tongue, Vancouver Island: Halstead, E. C., 1409.
Glacial history, Timiskaming–Algoma area: Boissonneau, A. N., 97.
Groundwater flow systems, Okanagan Highland, B.C.: Lawson, D. W., 813.
Holocene pollen assemblages, Tiger Hills, Manitoba: Ritchie, J. C. and Lichti-Federovich, S., 873.
Late-glacial palynology, St. Hilaire, Quebec: Terasmae, J. and LaSalle, P., 249.
Marine algal bed, Champlain Sea, near Ottawa: Mott, R. J., 319.
Patterned ground, Newfoundland: Henderson, E. P., 1443.

Pleistocene muskox (*Symbos*), British Columbia: Harington, C. R., 1161.
Pleistocene stratigraphy, Saskatoon area: Christiansen, E. A., 1167.
Postglacial rebound, Arctic Canada: Andrews, J. T., 39.
Ribbed moraine, Labrador: Cowan, W. R., 1145.
Terraces at Cochrane, Alberta: Stalker, A. MacS., 1455.
Thin till, west-central Saskatchewan: Christiansen, E. A., 329.
Ungulates at Cochrane, Alberta: Churcher, C. S., 1467.

Quebec
Ages of carbonatites in: Doig, R. and Barton, J. M. Jr., 1401.
Ancient landslide along Saguenay River: LaSalle, P. and Chagnon, J.-Y. 548.
Devonian continental rocks, Restigouche River: Dineley, D. L. and Williams, B. P. J., 945.
Grand Bois anomaly, another Monteregian pluton: Kumarapeli, P. S. *et al.*, 550.
Granulite fabric, Mont Tremblant Park: Katz, M., 801.
Igneous structures and emplacement, Mount Johnson: Philpotts, A. R., 1131.
Late-glacial palynology, St. Hilaire: Terasmae, J. and LaSalle, P., 249.
Major-element geochemistry, Noranda volcanic belt: Baragar, W. R. A., 773.
Metamorphism in silicate iron-formation, Cape Smith belt: Hashimoto, T. and Béland, R., 881.
Nouvel impact météoritique fossile, Charlevoix: Rondot, J., 1305.
Sulfide–diabase relationships, Horne mine: Mookherjee, A. and Suffel, G. G., 421.
Two gravity profiles, Manicouagan–Wabush area: Grant, F. S., 895.

Saskatchewan
Barren halite bodies in sylvinite zone, Esterhazy: McIntosh, R. A. and Wardlaw, N. C., 1221.
Gravels and sands: Stalker, A. MacS., 155.
Pleistocene stratigraphy, Saskatoon area: Christiansen, E. A., 1167.
Thin till: Christiansen, E. A., 329.
Wollaston Lake fold-belt: Money, P. L., 1489.

Scandinavia
Precambrian isotope geology, Baltic Shield: Kratz, K. O. *et al.*, 657

Scolecodonts
In Windsor Group, Nova Scotia: Globensky, Y., 1397.

Sedimentation
Depositional shape of sand bodies, Halfway Formation, B.C.: Mothersill, J. S., 1321.
Interstratified glauconite-montmorillonoid pellets, B.C.: Murray, J. W. and Mackintosh, E. E., 243.
Intertidal sand bodies, Bay of Fundy: Swift, D. J. P. and McMullen, R. M., 175.
Phosphate diagenesis of carbonate sediments: d'Anglejan, B. F., 81.

Seismic Surveys
Carpatho-Balkan region: Subbotin, S. I. *et al.*, 1027.
Continental margin, eastern U.S.A.: Drake, C. L. *et al.*, 993.
Crust–mantle boundary in Hudson Bay: Weber, J. R. and Goodacre, A. K., 1297.
Explosion seismology in crust and mantle studies: Kosminskaya, I. P. and Sverev, S. M., 1091.
Northern Appalachians: Sheridan, R. E. and Drake, C. L., 337.
Seismic-profiler investigation, northeast of Newfoundland: Grant, A. C., 1187.
Structure and mobility of crust and mantle, Fiji–Tonga region: Oliver, J. and Isacks, B., 985.
West from Oregon: Dehlinger, P. *et al.*, 1079.

Siberia
Geochronology of Aldan Shield: Tougarinov, A. I., 649.

Silurian
Ordovician–Silurian boundary, Arisaig, N.S.: Fullager, P. D. and Bottino, M. L., 311.
Volcanics at Arisaig, Nova Scotia: Fullager, P. D. and Bottino, M. L., 311.

South America
K–Ar and Rb–Sr dating: Hurley, P. M. *et al.*, 633.
Precambrian geochronology: Cordani, U. G. *et al.*, 629.

Stratigraphy
Devonian continental rocks, Restigouche River, Quebec: Dineley, D. L. and Williams, B. P. J., 945.
Ordovician carbonates and shales, northern Newfoundland: Tuke, M. F., 501.
Ordovician limestones, Ottawa Valley (Discussion): Kay, M., 166.
Ordovician limestones, Ottawa Valley (Reply): Barnes, C. R., 169.
Ordovician limestones, Ottawa Valley (Comment): Sinclair, G. W., 172.
Paleolacustrine arenites, Holleford Crater, Ontario: St. John, B. E., 935.
Pleistocene, Saskatoon area: Christiansen, E. A., 1167.
Terraces at Cochrane, Alberta: Stalker, A. MacS., 1455.
Tertiary–Cretaceous rocks, Somerset Island: Dineley, D. L. and Rust, B. R., 791.

Stromatolites
Dating Precambrian by: Glaessner, M. F., 585.

Structural Geology
Continental and oceanic structure west from Oregon: Dehlinger, P. *et al.*, 1079.
Crustal structure, Caspian, Black, Mediterranean Seas: Neprochnov, Yu. P., 1037.
Crustal structure, continental margins of India: Narain, H. *et al.*, 1051.
Deep crustal structures, Carpatho-Balkan region: Subbotin, S. I., 1027.
Deriving contour maps: Newton, R., 165.
Evolution of Slocan Syncline, B.C.: Ross, J. V. and Kellerhals, P., 851.
La structure semi-circulaire de Charlevoix: Rondot, J., 1305.
Magnetic anomalies and crustal structure, Kenora District, Ontario: Hall, D. H., 1277.
Middle Ordovician klippen, northern Newfoundland: Tuke, M. F., 501.
Structural features, southern part of Superior Province: Kalliokoski, J., 1199.
Structural relations, Shuswap Complex: Ross, J. V., 831.
Structures of continental margins: Worzel J. L., 963.
Structure of crust and mantle near island arcs: Oliver, J. and Isacks, B., 985.
Structures off eastern United States: Drake, C. L. *et al.*, 993.
Structures of transition zones: Beloussov, V. V. and Kosminskaya, I. P., 1011.
Subsidence of North Sea area: Collette, B. J., 1123.
Tracing of hinge-line ore bodies: Stauffer, M. R., 69.
Transcontinental crustal sections, U.S.S.R.: Beliayevsky, N. A. *et al.*, 1067.
Wollaston Lake fold-belt, Saskatchewan–Manitoba: Money, P. L., 1489.

Sulfides
Effect of diabase dike intrusion on: Graham, R. A. F., 545.
Genetic implications, Horne mine, Quebec: Mookherjee, A. and Suffel, G. G., 421.
Superstructures of two pyrrhotites: Fleet, M. E., 1183.

Superior Province
Bouguer anomalies along boundary of, Manitoba: Gibb, R. A., 439.
Heat flow in: Jessop, A. M., 61.
Rb–Sr and K–Ar ages near Kirkland Lake: Purdy, J. W. and York, D., 699.
Structural features, metallogenic patterns in: Kalliokoski, J., 1199.

Surficial Deposits
Ribbed moraine: analysis and origin, Labrador: Cowan, W. R., 1145.
Timiskaming–Algoma area: Boissonneau, A. N., 97.

Symbos
Pleistocene muskox, Dease Lake, B.C.: Harington, C. R., 1161.

Tanzania
Nepheline-bearing rocks: Brock, P. W. G., 387.

Tectonics
Autochthonous and allochthonous rocks, northern Newfoundland: Tuke, M. F., 501.
Sub-crustal flow: Clifford, P. M., 93.
Tectonic significance of isotope ages, Appalachians: Harper, C. T., 49.
Tectonic significance of isotopic ages, Appalachians (Discussion): Dennis, J. G., 959.
Tectonic significance of isotopic ages, Appalachians (Reply to Dennis): Harper, C. T., 961.
Tectonic significance of isotopic ages, Appalachians (Discussion): Church, W. R., 1331.
Tectonic significance of isotopic ages, Appalachians (Reply to Church): Harper, C. T., 1334.

Tertiary
A new cetacean, Vancouver Island: Russell, L. S., 929.
Evolution of Bella Coola – Ocean Falls, British Columbia: Baer, A. J., 1429.
Sedimentary features, Tertiary–Cretaceous rocks, Somerset Island: Dineley, D. L. and Rust, B. R., 791.
Stabilité d'aimantation des basaltes, Oregon et Washington: Irving, E. and Roy, J. L., 907.

***Thescelosaurus*? sp.**
Willow Creek beds, Montana: Russell, L. S., 327.

Triassic
Shape of sand bodies, Halfway Formation, B.C.: Mothersill, J. S., 1321.

Ultramafic Rocks
Contrasting Archean bodies, Ontario: Naldrett, A. J. and Mason, G. D., 111.

United States
Continental margin of, Eastern: Drake, C. L. *et al.*, 993.

Upper Mantle
Advances in marine geophysical research: Worzel, J. L., 963.
Carpatho-Balkan region: Subbotin, S. I. *et al.*, 1027.
Continental and oceanic structure west from Oregon: Dehlinger, P. *et al.*, 1079.
Continental margin, eastern United States: Drake, C. L. *et al.*, 993.
Crustal structure, Caspian, Black and Mediterranean Seas: Neprochnov, Yu. P., 1037.
Development of transition zones between continents and oceans: Beloussov, V. V. and Kosminskaya, I. P., 1011.

Explosion seismology in crust and mantle studies: Kosminskaya, I. P. and Zverev, S. M., 1091.
Structure and mobility, near island arcs: Oliver, J. and Isacks, B., 985.
Transcontinental crustal sections, U.S.S.R.: Beliayevsky, N. A. *et al.*, 1067.

U.S.S.R.
Geochronology, Ukrainian Precambrian: Semenenko, N. P. *et al.*, 661.
Transcontinental crustal sections of: Beliayevsky, N. A. *et al.*, 1067.

Vermont
Isotopic ages: Harper, C. T., 49.

Vertebrates
Marine Cretaceous, Manitoba: Bardack, D., 145.
New cetacean, Sooke Formation, B.C.: Russell, L. S., 929.
Pleistocene muskox, Dease Lake. B.C.: Harington, C. R., 1161.
Pleistocene ungulates at Cochrane, Alberta: Churcher, C. S., 1467.

Washington
Stabilité d'aimantation des basaltes: Irving, E. and Roy, J. L., 907.

Western Canada
Studies of formation waters: van Everdingen, R. O. 523.

X-ray Diffraction Analyses
Quantitative determination of minerals by: Bristol, C. C., 235.

Canadian Journal of Earth Sciences

EDITOR:
J. W. AMBROSE

CONTENTS

VOLUME 5, 1968

Published by The National Research Council of Canada

CONTENTS

FEBRUARY

ARTICLES:

F. Aumento The Mid-Atlantic Ridge near 45°N. II. Basalts from the area of Confederation Peak 1

H. W. Dosso and J. A. Jacobs Analogue model measurements of electromagnetic variations in the near field of an oscillating line current 23

G. H. Faye The optical absorption spectra of certain transition metal ions in muscovite, lepidolite, and fuchsite 31

J. T. Andrews Postglacial rebound in Arctic Canada: Similarity and prediction of uplift curves 39

C. T. Harper Isotopic ages from the Appalachians and their tectonic significance 49

A. M. Jessop Three measurements of heat flow in Eastern Canada 61

M. R. Stauffer The tracing of hinge-line ore bodies in areas of repeated folding 69

B. F. d'Anglejan Phosphate diagenesis of carbonate sediments as a mode of in situ formation of marine phosphorites: Observations in a core from the eastern Pacific 81

P. G. Manning Optical absorption spectra of octahedrally bonded Fe^{3+} in vesuvianite 89

P. M. Clifford Flood basalts, dike swarms and sub-crustal flow 93

A. N. Boissonneau Glacial history of Northeastern Ontario II. The Timiskaming-Algoma area 97

A. J. Naldrett and G. D. Mason Contrasting Archean ultramafic igneous bodies in Dundonald and Clergue Townships, Ontario 111

D. Bardack Fossil vertebrates from the marine Cretaceous of Manitoba 145

A. MacS. Stalker Identification of Saskatchewan gravels and sands 155

NOTES:

R. Newton Deriving contour maps from geological data 165

M. Kay Discussion: Stratigraphy and sedimentary environments of some Wilderness (Ordovician) limestones, Ottawa Valley, Ontario, by C. R. Barnes 166

C. R. Barnes Reply: Stratigraphy and sedimentary environments of some Wilderness (Ordovician) limestones, Ottawa Valley, Ontario, by C. R. Barnes 169

G. W. Sinclair Comment on Discussion and Reply: Stratigraphy and sedimentary environments of some Wilderness (Ordovician) limestones, Ottawa Valley, Ontario, by C. R. Barnes 172

APRIL

ARTICLES:

D. J. P. Swift and R. M. McMullen Intertidal sand bodies in the Minas Basin, Bay of Fundy, Nova Scotia 175

H. S. Hasegawa Surface waves observed close to large chemical explosions at Suffield, Alberta 185

J. W. Hopkins Correlation of air temperature normals for the Canadian Great Plains with latitude, longitude, and altitude 199

S. K. Srivastava Ephedralean pollen from the Upper Cretaceous Edmonton Formation of Alberta(Canada) and their paleoecological significance 211

J. F. Dormaar Infrared absorption spectra of mineral matter in saxicolous lichens and associated mosses 223

Grant A. Bartlett Planktonic Foraminifera — new dimensions with the Scanning Electron Microscope 231

Calvert C. Bristol The quantitative determination of minerals in some metamorphosed volcanic rocks by X-ray powder diffraction 235

J. W. Murray and E. E. Mackintosh Occurrence of interstratified glauconite-montmorillonoid pellets, Queen Charlotte Sound, British Columbia 243

J. Terasmae and P. Lasalle Notes on late-glacial palynology and geochronology at St. Hilaire, Quebec 249

John G. Payne Geology and geochemistry of the Blue Mountain nepheline syenite 259

J. L. Roy and W. A. Robertson Evidence for diagenetic magnetization in the Maringouin Formation 275

E. M. Cameron A geochemical profile of the Swan Hills Reef 287

Paul D. Fullager and Michael L. Bottino Radiometric age of the volcanics at Arisaig, Nova Scotia, and the Ordovician Silurian boundary 311

NOTES:

R. J. Mott A radiocarbon-dated marine algal bed of the Champlain Sea episode near Ottawa, Ontario 319

F. G. Smith Three computer programs for contouring map data 324

Loris S. Russell A dinosaur bone from Willow Creek beds in Montana 327

E. A. Christiansen A thin till in west-central Saskatchewan, Canada 329

A. J. Naldrett and G. D. Mason Erratum: Contrasting ultramafic igneous bodies in Dundonald and Clergue Townships, Ontario 336

JUNE (PART 1)

ARTICLES:

Robert E. Sheridan and Charles L. Drake Seaward extension of the Canadian Appalachians 337

R. K. Wanless, W. D. Loveridge, and G. Mursky A geochronological study of the White Creek batholith, southeastern British Columbia 375

P. W. G. Brock Metasomatic and intrusive nepheline-bearing rocks from the Mbozi syenite-gabbro complex, southwestern Tanzania 387

Asoke Mookherjee and G. G. Suffel Massive sulfide–late diabase relationships, Horne mine, Quebec: Genetic and chronological implications 421

R. A. Gibb The densities of Precambrian rocks from northern Manitoba 433

R. A. Gibb A geological interpretation of the Bouguer anomalies adjacent to the Churchill–Superior boundary in northern Manitoba 439

E. W. Reinhardt Phase relations in cordierite-bearing gneisses from the Gananoque area, Ontario 455

D. K. B. Fenwick, M. J. Keen, Charlotte Keen, and A. Lambert Geophysical studies of the continental margin northeast of Newfoundland 483

M. F. Tuke Autochthonous and allochthonous rocks in the Pistolet Bay area in northernmost Newfoundland 501

John F. Hermance Model studies of the coast effect on geomagnetic variations 515

R. O. van Everdingen Studies of formation waters in Western Canada: Geochemistry and hydrodynamics 523

NOTES:

R. A. F. Graham Effects of diabase dike intrusion on sulfide minerals at Manitouwadge, Ontario 545

Pierre LaSalle and Jean-Yves Chagnon An ancient landslide along the Saguenay River, Quebec 548

P. S. Kumarapeli, M. E. Coates, and N. H. Gray The Grand Bois anomaly: the magnetic expression of another Monteregian pluton 550

JUNE (PART 2)

ARTICLES:

Gunter Faure, J. G. Murtaugh, and R. J. E. Montigny The geology and geochronology of the basement complex of the central Transantarctic Mountains 555

W. Compston and P. A. Arriens The Precambrian geochronology of Australia 561

M. F. Glaessner Biological events and the Precambrian time scale 585

U. Aswathanarayana Metamorphic chronology of the Precambrian provinces of South India 591

V. S. Venkatasubramanian, K. Gopalan, S. S. Iyer, S. Pal, and R. S. Krishnan Studies on the Rb-Sr and K-Ar dating of minerals from the Precambrian of India 601

H. L. Allsopp, T. J. Ulrych, and L. O. Nicolaysen Dating some significant events in the history of the Swaziland System by the Rb-Sr isochron method 605

J. R. Vail, N. J. Snelling, and D. C. Rex Pre-Katangan geochronology of Zambia and adjacent parts of Central Africa 621

U. G. Cordani, G. C. Melcher, and F. F. M. de Almeida Outline of the Precambrian geochronology of South America 629

P. M. Hurley, G. C. Melcher, W. H. Pinson Jr., and H. W. Fairbairn Some orogenic episodes in South America by K-Ar and whole-rock Rb-Sr dating 633

A. I. Tougarinov, K. G. Knorre, L. L. Shanin, and L. N. Prokofieva The geochronology of some Precambrian rocks of southern West Africa 639

Tatsuro Matsumoto, Masaru Yamaguchi, Takeru Yanagi, Susumu Matsushita, Ichikazu Hayase, Kyoichi Ishizaka, Yoshinori Kawano, and Yoshio Ueda The Precambrian problem in younger orogenic zones: An example from Japan 643

A. I. Tougarinov Geochronology of the Aldan Shield, southeastern Siberia 649

K. O. Kratz, E. K. Gerling, and S. B. Lobach-Zhuchenko The isotope geology of the Precambrian of the Baltic Shield 657

N. P. Semenenko, A. P. Scherbak, A. P. Vinogradov, A. I. Tougarinov, G. D. Eliseeva, F. I. Cotlovskay, and S. G. Demidenko Geochronology of the Ukrainian Precambrian 661

F. Leutwein Contribution à la connaissance du précambrien récent en Europe Occidentale et développement géochronologique du Briovérien en Bretagne (France) 673

Ole Larsen and Jørgen Møller Potassium-argon age studies in West Greenland 683

C. H. Stockwell Geochronology of stratified rocks of the Canadian Shield 693

J. W. Purdy and D. York Rb-Sr whole-rock and K-Ar mineral ages of rocks from the Superior Province near Kirkland Lake, northeastern Ontario, Canada 699

H. W. Fairbairn, G. Faure, W. H. Pinson Jr., and P. M. Hurley Rb-Sr whole-rock age of the Sudbury lopolith and basin sediments 707

S. S. Goldich Geochronology in the Lake Superior region 715

D. C. Green, H. Baadsgaard, and G. L. Cumming Geochronology of the Yellowknife area, Northwest Territories, Canada 725

J. D. Obradovich and Z. E. Peterman Geochronology of the Belt Series, Montana 737

Zell E. Peterman and Carl E. Hedge Chronology of Precambrian events in the Front Range, Colorado 749

Marvin A. Lanphere Geochronology of the Yavapai Series of central Arizona 757

Donald E. Livingston and Paul E. Damon The ages of stratified Precambrian rock sequences in central Arizona and northern Sonora 763

AUGUST (PART 1)

ARTICLES:

W. R. A. Baragar Major-element geochemistry of the Noranda volcanic belt, Quebec–Ontario 773

D. L. Dineley and B. R. Rust Sedimentary and paleontological features of the Tertiary–Cretaceous rocks of Somerset Island, Arctic Canada 791

Michael Katz The fabric of the granulites of Mont Tremblant Park, Quebec 801

D. W. Lawson Groundwater flow systems in the crystalline rocks of the Okanagan Highland, British Columbia 813

F. E. M. Lilley and C. M. Carmichael Electromagnetic damping of elastic waves: Experimental results 825

John V. Ross Structural relations at the eastern margin of the Shuswap Complex, near Revelstoke, southeastern British Columbia 831

John V. Ross and P. Kellerhals Evolution of the Slocan Syncline in south-central British Columbia 851

J. C. Ritchie and Sigrid Lichti-Federovich Holocene pollen assemblages from the Tiger Hills, Manitoba 873

T. Hashimoto and R. Béland Low to medium-grade metamorphism in silicate iron-formations of the Cape Smith belt, New Quebec 881

F. S. Grant Two gravity profiles in the Manicouagan-Wabush area of west-central Quebec 895

E. Irving and J. L. Roy Intensité et stabilité d'aimantation des basaltes de l'Oregon et Washington et leurs applications à l'expansion du fond de l'océan et à d'autres problèmes géophysiques 907

S. K. Srivastava *Azolla* from the Upper Cretaceous Edmonton Formation, Alberta, Canada 915

E. K. Agyei and C. C. McMullen A study of the isotopic abundance of boron from various sources 921

L. S. Russell A new cetacean from the Oligocene Sooke Formation of Vancouver Island, British Columbia 929

Brian E. St. John Paleolacustrine arenites in the Holleford meteorite crater, Ontario 935

D. L. Dineley and B. P. J. Williams The Devonian continental rocks of the lower Restigouche River, Quebec 945

NOTES:

K. K. Nguyen, A. J. Sinclair, and W. G. Libby Age of the northern part of the Nelson batholith 955

DISCUSSIONS:

J. G. Dennis Isotopic ages from the Appalachians and their tectonic significance: Discussion 959

C. T. Harper Isotopic ages from the Appalachians and their tectonic significance: Reply to J. G. Dennis 961

AUGUST (PART 2)

ARTICLES:

J. Lamar Worzel Advances in marine geophysical research of continental margins 963

Jack Oliver and Bryan Isacks Structure and mobility of the crust and mantle in the vicinity of island arcs 985

Charles L. Drake, John I. Ewing, and Henry Stockard The continental margin of the eastern United States 993

V. V. Beloussov and I. P. Kosminskaya Structure and development of transition zones between the continents and oceans 1011

S. I. Subbotin, V. B. Sollogub, D. Prosen, T. Dragasevic, E. Mituch, and K. Posgay Junction of deep structures of the Carpatho-Balkan region with those of the Black and Adriatic Seas 1027

Yu. P. Neprochnov Structure of the earth's crust of epi-continental seas: Caspian, Black, and Mediterranean 1037

F. F. Evison Active regions of the southwest Pacific 1045

Hari Narain, K. L. Kaila, and R. K. Verma Continental margins of India 1051

N. A. Beliayevsky, A. A. Borisov, I. S. Volvovsky, and Yu. K. Schukin Transcontinental crustal sections of the U.S.S.R. and adjacent areas 1067

P. Dehlinger, R. W. Couch, and M. Gemperle Continental and oceanic structure from the Oregon coast westward across the Juan de Fuca Ridge 1079

I. P. Kosminskaya and S. M. Zverev Abilities of explosion seismology in oceanic and continental crust and mantle studies 1091

T. Rikitake, S. Miyamura, I. Tsubokawa, S. Murauchi, S. Uyeda, H. Kuno, and M. Gorai Geophysical and geological data in and around the Japan Arc 1101

NOTES:

E. S. W. Simpson and A. du Plessis Bathymetric, magnetic, and gravity data from the continental margin of southwestern Africa 1119

B. J. Collette The subsidence of the North Sea area: A summary 1123

R. M. Demenitskaya, A. M. Karasik, Ju. G. Kiselev, I. V. Litvinenko, and S. A. Ushakov The transition zone between the Eurasian continent and the Arctic Ocean 1125

OCTOBER

ARTICLES:

A. R. Philpotts Igneous structures and mechanism of emplacement of Mount Johnson, a Monteregian intrusion, Quebec 1131

G. S. Murthy, W. F. Fahrig, and D. L. Jones The paleomagnetism of the Michikamau anorthositic intrusion, Labrador 1139

W. R. Cowan Ribbed moraine: Till-fabric analysis and origin 1145

C. R. Harington A Pleistocene muskox (*Symbos*) from Dease Lake, British Columbia 1161

E. A. Christiansen Pleistocene stratigraphy of the Saskatoon area, Saskatchewan, Canada 1167

W. A. Robertson, J. L. Roy, and J. K. Park Magnetization of the Perry Formation of New Brunswick, and the rotation of Newfoundland 1175

M. E. Fleet The superstructures of two synthetic pyrrhotites 1183

A. C. Grant Seismic-profiler investigation of the continental margin northeast of Newfoundland 1187

J. Kalliokoski Structural features and some metallogenic patterns in the southern part of the Superior Province, Canada 1199

B. Caner and D. R. Auld Magneto-telluric determination of upper mantle conductivity structure at Victoria, British Columbia 1209

R. A. McIntosh and K. C. Wardlaw Barren halite bodies in the sylvinite mining zone at Esterhazy, Saskatchewan 1221

P. H. Reynolds and R. D. Russell Isotopic composition of lead from Balmat, New York 1239

W. F. Fahrig and K. E. Eade The chemical evolution of the Canadian Shield 1247

R. O. van Everdingen Mobility of main ion species in reverse osmosis and the modification of subsurface brines 1253

D. A. Grant Current, temperature, and depth data from a moored oceanographic buoy 1261

D. K. Robertson and G. L. Cumming Lead and sulfur isotope ratios from the Great Slave Lake area, Canada 1269

D. H. Hall Regional magnetic anomalies, magnetic units, and crustal structure in the Kenora District of Ontario 1277

J. R. Weber and A. K. Goodacre An analysis of the crust–mantle boundary in Hudson Bay from gravity and seismic observations 1297

Jehan Rondot Nouvel impact météoritique fossile? La structure semi-circulaire de Charlevoix 1305

NOTES:

E. Irving Measurement of polarity in oceanic basalt 1319

John S. Mothersill A short note on the depositional shape of the sand bodies comprising the discontinuous part of the Halfway Formation, British Columbia 1321

C. S. Venkitasubramanyan Determination of optic axial orientation of uniaxial minerals and [02$\bar{2}$1] of dolomite using an ordinary microscope 1323

DISCUSSIONS:

W. R. Church Isotopic ages from the Appalachians and their tectonic significance: Discussion 1331

C. T. Harper Isotopic ages from the Appalachians and their tectonic significance: Reply to W. R. Church 1334

DECEMBER

ARTICLES:

P. C. van de Kamp Geochemistry and origin of metasediments in the Haliburton–Madoc area, southeastern Ontario 1337

A. Turek and Z. E. Peterman Preliminary Rb–Sr geochronology of the Rice Lake – Beresford Lake area, southeastern Manitoba 1373

P. J. Williams Ice distribution in permafrost profiles 1381

K. Kanehira and D. Bachinski Mineralogy and textural relationships of ores from the Whalesback Mine, northeastern Newfoundland 1387

Yvon Globensky Scolecodonts from the Windsor Group (Mississippian) of Nova Scotia 1397

Ronald Doig and Jackson M. Barton Jr. Ages of carbonatites and other alkaline rocks in Quebec 1401

E. Carl Halstead The Cowichan Ice tongue, Vancouver Island 1409

J. H. Sass, P. G. Killeen, and E. D. Mustonen Heat flow and surface radioactivity in the Quirke Lake Syncline near Elliot Lake, Ontario, Canada 1417

A. J. Baer Model of evolution of the Bella Coola – Ocean Falls Region, Coast Mountains, British Columbia 1429

Eric P. Henderson Patterned ground in Southeastern Newfoundland 1443

A. MacS. Stalker Geology of the terraces at Cochrane, Alberta 1455

C. S. Churcher Pleistocene ungulates from the Bow River gravels at Cochrane, Alberta 1467

P. L. Money The Wollaston Lake fold-belt system, Saskatchewan–Manitoba 1489

NOTES:

J. F. Lerbekmo Chemical and modal analyses of some Upper Cretaceous and Paleocene bentonites from western Alberta 1505

F. W. Jones and L. P. Geldart Spectral analysis of vertical and horizontal earth current components at separated locations 1512

E. J. Schwarz Thermomagnetic properties of banded manganiferous sediment from the Mid-Atlantic Ridge 1517

J. A. Gilliland and A. Treichel GOWN—a computer storage system for groundwater data 1518

Author index 1525

Subject index 1533

Contents of Volume 5 iii